32. (New) The method for stabilizing a short-pulse laser claimed in claim 30, wherein thermal expansion of said fiber spool is matched to that of said optical fiber.

33. (New) The method for stabilizing a short-pulse laser claimed in claim 30, further comprising:

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placing the short-pulse laser in a temperature-controlled enclosure.

34. (New) The method as claimed in claim 30, wherein the short-pulse laser is a first short-pulse laser and the stability of a second short-pulse laser is controlled along with the stability of the first short-pulse laser and wherein, further, the first and second short-pulse lasers are fiber lasers, the method comprising:

constructing the first and second short-pulse lasers from identical components in an identical fashion;

pumping the first and second short-pulse lasers with a shared laser;

wrapping the first and second short-pulse lasers on a shared fiber spool; and

placing the first and second short-pulse lasers in a single enclosure.

35. (New) A method as claimed in claim 30, further comprising:

placing the fiber spool, around which the fiber laser is wrapped, in a temperature controlled and acoustically damped enclosure housing.

36. (New) The method as claimed in claim 34, further comprising:

holding to zero a time-averaged cavity length mismatch of the fiber laser.

37. (New) A method of reducing timing jitter between two short-pulse fiber lasers, the method comprising:

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co-wrapping the two fiber lasers on a single fiber spool.

38. (New) A method as claimed in claim 37, further comprising:

driving the two fiber lasers with a single pump source; and

enclosing the two fiber lasers in a single enclosure.

39. (New) A method as claimed in claim 38, further comprising:

controlling the environment within the single enclosure relative to the environment external to the single enclosure.

40. (New) A method as claimed in claim 37, further comprising:

independently controlling the two fiber lasers.

41. (New) A method of stabilizing a fiber laser, comprising:

isolating the fiber laser from an external environment; and

adjusting the length of a cavity of the fiber laser in response to changes in environmental conditions.

42. (New) A method as claimed in claim 41, further comprising:

altering the repetition rate of the laser with a piezoelectric transducer, wherein the laser is a short-pulse laser.

43. (New) A method as claimed in claim 42, further comprising:

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conditioning a drive signal of the piezoelectric transducer to avoid abrupt voltage changes on the leading or falling edges of the drive signal at the input to the piezoelectric transducer.

44. (New) A method as claimed in claim 42, further comprising:

driving the piezoelectric transducer with a sinusoidal drive signal.

45. (New) A fiber laser system comprising:

a first fiber operable to conduct optical energy;

a spool around which said first fiber is wrapped,

wherein said first fiber is isolated from external environmental conditions.

46. (New) A fiber laser system as claimed in claim 45, further comprising:

an enclosure operable to environmentally isolate said first fiber and said spool.

47. (New) A fiber laser system as claimed in claim 45, further comprising:

a second fiber co-wrapped around said spool; and

a single optical pump source operable to drive both said first and second fibers.

48. (New) A fiber laser system as claimed in claim 45, further comprising:

a piezoelectric transducer operable to alter the cavity length of said laser.

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49. (New) A fiber laser system as claimed in claim 47, further comprising:

dithering means for dithering the outputs of said first and second fibers.

50. (New) A fiber laser system as claimed in claim 49, wherein the output of said first fiber is dithered at a scan frequency and the output of said second fiber is dithered at a rate substantially equal to the average repetition rate of the output of said first fiber.

51. (New) A fiber laser system as claimed in claim 47, further comprising:

a first Faraday rotator mirror at an end of said first fiber;

an optical assembly comprising a second Faraday rotator mirror and a piezoelectric transducer mounted on a mirror.

52. (New) A fiber laser system as claimed in claim 51, further comprising:

at least two identical sets of modelocking optics, each set of modelocking optics comprising a waveplate, a Faraday rotator and a polorizable beamsplitter, wherein at least one set of modelocking optics is associated with said first fiber and at least one other set of modelocking optics is associated with said second fiber.

53. (New) A short-pulse laser, comprising:

a fiber laser for generating a pulse output; and

means for improving stability of laser operation comprising spooling said fiber laser on a fiber spool.

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54. (New) A method of stabilizing a short-pulse fiber laser, comprising:

placing the short-pulse fiber laser in a temperature-controlled enclosure;

isolating said fiber laser from an external environment;

controlling the temperature within the temperature-controlled enclosure to stabilize the laser.

55. (New) The method for stabilizing a short-pulse fiber laser claimed in claim 54, further comprising:

wrapping said fiber laser onto a fiber spool; and

operating the fiber laser while said fiber laser remains wrapped on said fiber spool.

56. (New) The method for stabilizing a short-pulse fiber laser claimed in claim 55, wherein said fiber spool is acoustically damped.

57. (New) A method of controlling the output of a short-pulse fiber laser, comprising:

stabilizing a repetition rate of the laser by controlling the temperature of the fiber.

58. (New) A method as claimed in claim 57 further comprising:

providing a piezoelectric transducer in communication with the laser; and

applying a voltage to the piezoelectric transducer,

wherein the repetition rate of the laser is dithered by movement of the piezoelectric transducer.

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59. (New) A method as claimed in claim 58 further comprising:

providing a phase locked loop circuit for controlling the average repetition rate of the laser.